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Docket No.: END920000187US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Hall et al.

)Examiner: Dinh, T.

Serial No.: 09/884,778

)Art Unit: 2338

Filing Date: 6/19/01

Title: **METHOD AND APPARATUS TO ESTABLISH CIRCUIT LAYERS
INTERCONNECTIONS**

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AMENDMENT

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Sir:

In response to the Office Action mailed May 9, 2002, please amend the above-identified patent application as follows:

IN THE SPECIFICATION:

Please delete the abstract and insert the following:

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--An interconnect formed between layers of a circuit board, wherein a conductive element is embedded in an opening within a laminate of the circuit board, and wherein the conductive element forms at least one contact pad extending beyond a surface of the laminate.--

IN THE CLAIMS:

Please amend the claims as follows:

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21. (Twice Amended) A method of forming a conductive path within a laminate, comprising:
providing an opening in the laminate; and
pressing a conductive element into the opening wherein a portion of the conductive element
forms at least one contact pad extending beyond a surface of the laminate, and wherein the conductive
element includes an inner element covered by an outer element.

22. (Original) The method of claim 21, wherein the opening is a hole.

23. (Original) The method of claim 21, wherein the conductive element is a sphere.

24. (Original) The method of claim 21, wherein the conductive element is a cylinder.

B³
27. (Twice Amended) A structure for interconnection between circuit layers, comprising:
a conductive element embedded into a laminate wherein a portion of the conductive element
forms at least one contact pad extending beyond a surface of the laminate, and wherein the conductive
element includes an inner element covered by an outer element.

28. (Original) The structure of claim 27, further including an opening in the laminate that the conductive
object is pressed into.

29. (Original) The structure of claim 28, wherein the opening is a hole in the laminate.

30. (Original) The structure of claim 27, wherein the conductive element is a sphere or a cylinder.

31. (Amended) The structure of claim 27, wherein the outer element of the conductive element is a material selected from the group consisting of: glass, copper, brass, and bronze.

32. (Original) The structure of claim 27, wherein the laminate is selected from the group consisting of epoxy, cyanate-epoxy blend, and glass reinforced carrier.

33. (Amended) The method of claim 21, wherein the inner element of the conductive element comprises a material selected from the group consisting of: glass, rubber and plastic.

34. (Amended) The method of claim 21, wherein the outer element of the conductive element comprises a material selected from the group consisting of: copper, brass, gold and bronze.

35. (Amended) The structure of claim 27, wherein the inner element of the conductive element comprises a material selected from the group consisting of: glass, rubber and plastic.

Please add the following new claims:

36. (New) A method of forming a conductive path within a laminate, comprising:

providing an opening in the laminate; and

pressing a conductive element into the opening wherein a portion of the conductive element forms at least one contact pad extending beyond a surface of the laminate.

37. (New) A structure for interconnection between circuit layers, comprising:

a conductive element embedded into a laminate wherein a portion of the conductive element forms at least one contact pad extending beyond a surface of the laminate.

REMARKS

Claims 1-35 are pending in this application. Claims 1-20, 25 and 26 have been withdrawn from consideration. By this amendment the abstract has been amended for clarification, claims 21 and 27 have been amended and new claims 36 and 37 have been added. Reconsideration and allowance in view of the amendments and the following remarks are respectfully requested.

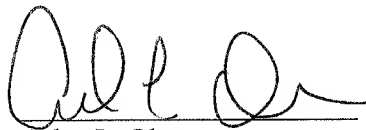
Claims 21-24 and 27-35 are rejected under 35 USC §112, second paragraph. By this amendment independent claims 21 and 27 have been amended for clarification.

Claims 21-24 and 27-35 are rejected under 35 U.S.C. §102(b) as being anticipated by Kawakita *et al.* (US 5,440,075, hereinafter "Kawakita"). Applicants respectfully assert that Kawakita fails to teach or suggest each and every feature of the claimed invention as required under §102(b). For example, Kawakita fails to teach or suggest, *inter alia*, a conductive element embedded or pressed into the opening of a laminate wherein a portion of the conductive element forms at least one contact pad extending beyond a surface of the laminate, as recited in claims 21 and 27.

In contrast, Kawakita teaches a conductive particle 103 buried between copper foils 102 that are deposited on the surface of the base 101. The conductive particle 103 does not extend beyond a surface of the laminate to form a contact pad, as required by the present invention.

Accordingly, Applicants respectfully request withdrawal of all rejections, and submit that the entire application is in condition for allowance. However, should the Examiner believe anything further is necessary in order to place the application in better condition for allowance, or if the Examiner believes that a telephone interview would be advantageous to resolve the issues presented, the Examiner is invited to contact the Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



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Date:

8-7-02

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